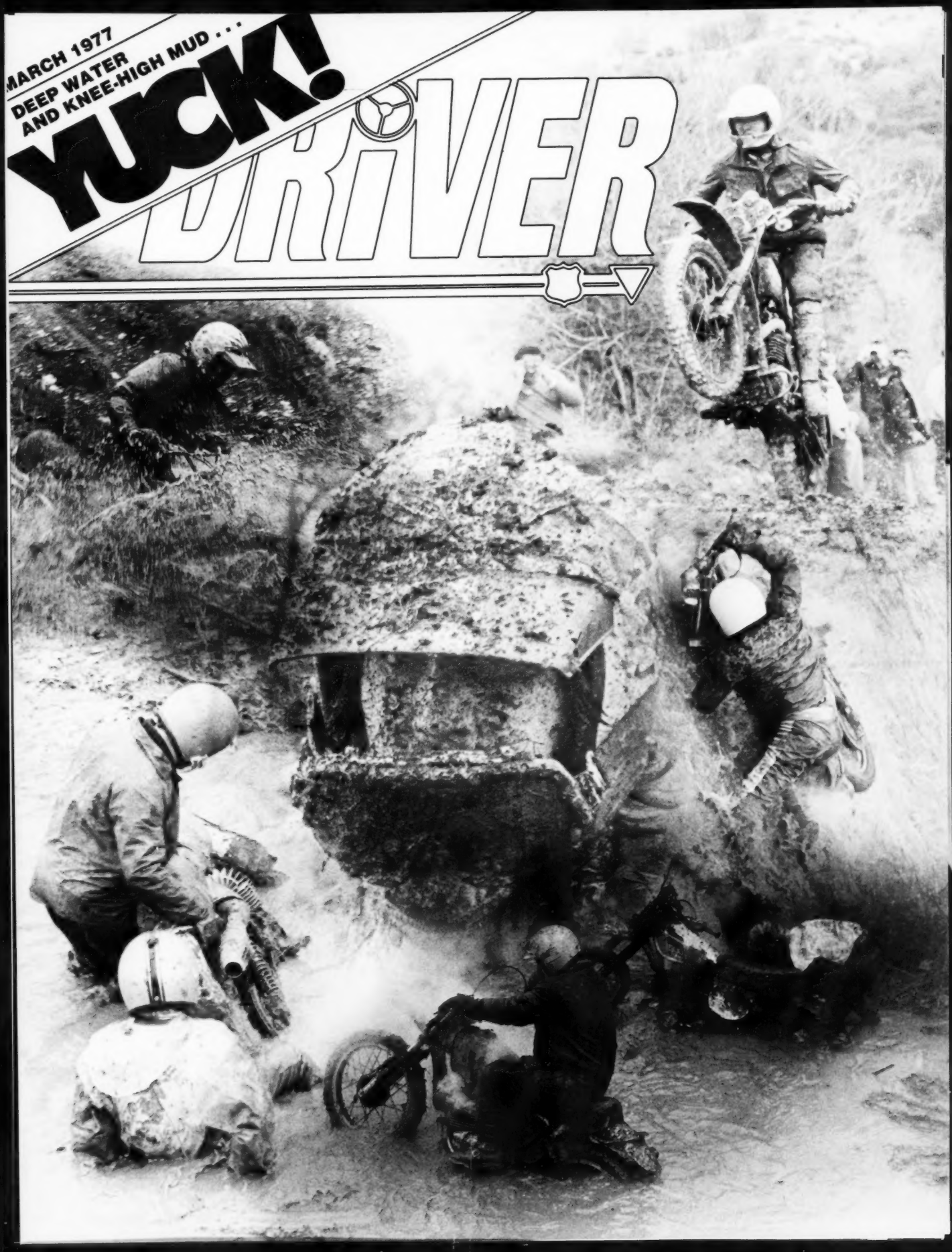
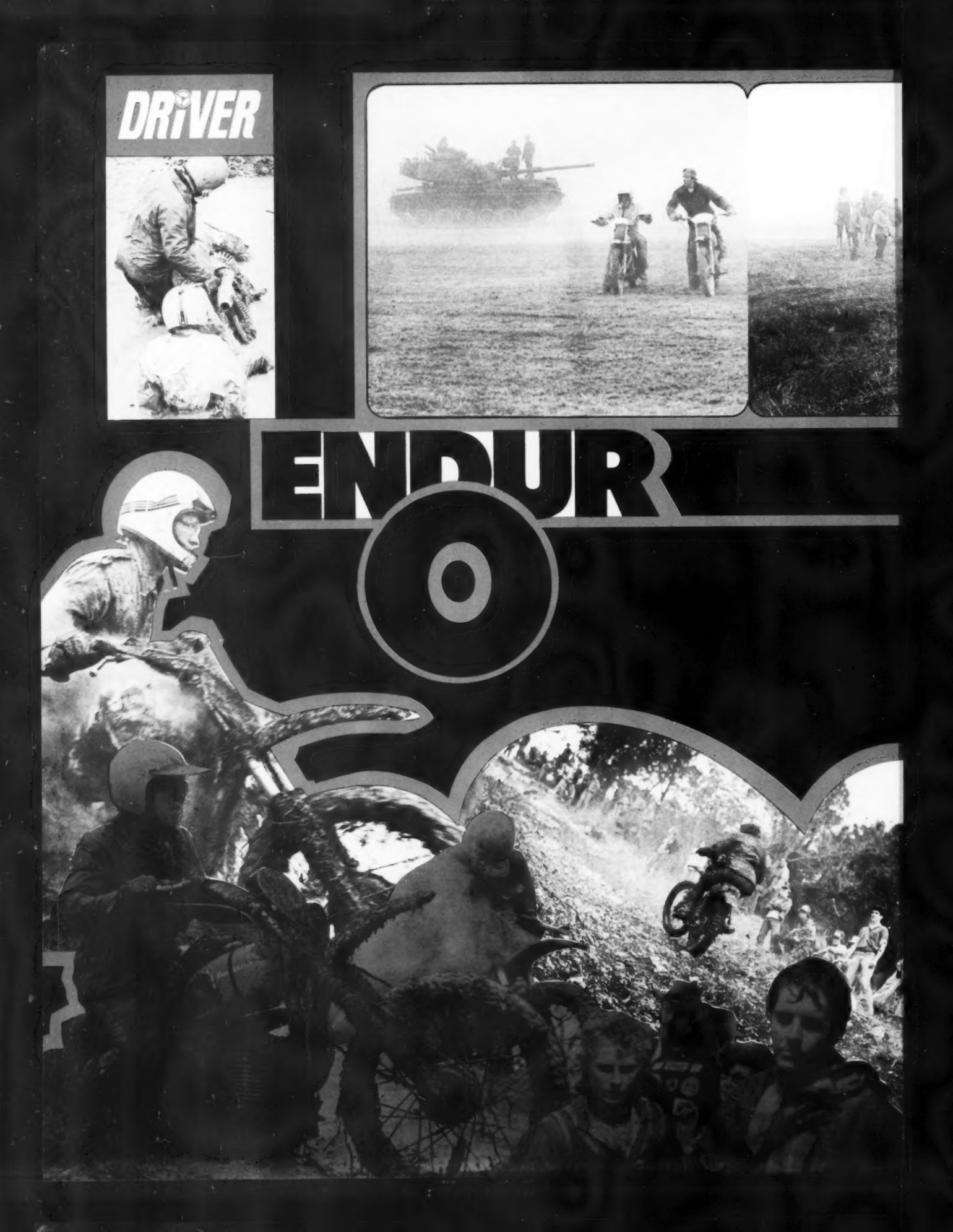

MARCH 1977
DEEP WATER
AND KNEE-HIGH MUD . . .
YUCK!
DRIVER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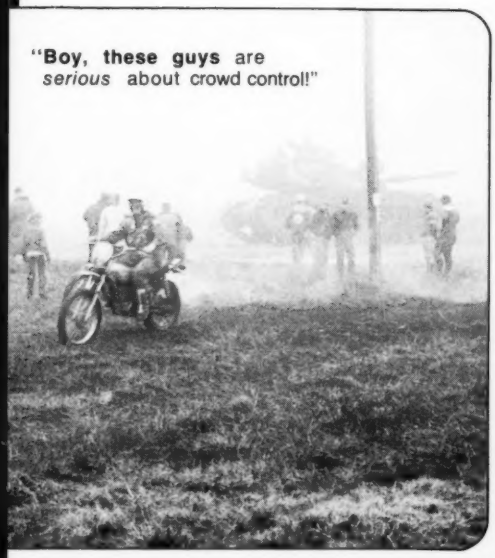

It isn't uncommon to read about scuba divers and swimmers having an occasional problem with water that's over their heads . . . neither is it unusual to hear armored vehicle or tank operators complain about their vehicles being mired up to the hubs in mud.

But when a motorcyclist complains about deep water or knee-deep mud, it warrants a second look. After all, bikers ride on paved streets. Right? Of course some of them call themselves "dirt riders," but that means they take a gravel fire road and kick up a little dust. That's right . . . isn't it?

No, not exactly. There is a growing group of motorcyclists who call themselves "enduro riders." Enduro riders (and motocrossers, and trials riders) are to your normal motorcycle rider as night is to day . . . not exactly opposites, but completely different.

This is Fun? Imagine taking a motorcycle 100 miles on the most forbidding terrain Texas has to offer, and in the process encountering streams (they call 'em streams in Texas, but anywhere else they'd be rivers) mud holes, mud flats, mud roads, mud hills, and semi-solid fields. Then imagine doing this in a very un-Chamber of Commerce mixture of light rain, heavy fog, and 35 degree temperatures.

If you can picture yourself doing all this and still having a smile on your face, then you, too, can qualify as an enduro rider.

It seemed to be fun for over 600 hardy souls in the central Texas area though. That's how many showed up for the 4th Annual Cowhouse Enduro, sponsored by the Fort Hood, Texas, Dirt Racers' Club.

FHDRC. As you may imagine, "4th Annual" anything usually indicates that there have been three similar events prior to the fourth one, and so it is with the Ft. Hood Dirt Riders' Club (FHDRC). Of course, they promote more than enduros, but we'll get to that later. Right now, you probably want to know more about the FHDRC, and more particularly, about enduros.

FHDRC first . . . according to Major Abe Racine, club publicity chairman, the FHDRC was formed in 1971 with the purpose of organizing area dirt riders into a group that could better protect the riders' interests. The original members decided that a unified front presented a better chance for the riders to be heard and was more effective than several individual voices crying in the wilderness.

Also at that time Ft. Hood was experiencing problems with riders going in off-limits areas and failing to comply with post rules about bikes. The club took over policing duties on the theory that riders would respond better to self-policing than to having non-bikers attempting to formulate rules and regs for riders.

The FHDRC received post sanction and support and was rewarded for their organizational efforts with over 360 square miles on which to ride. With the exception of the artillery impact area and the bird sanctuary, virtually all of Ft. Hood was opened to them.

The 100-plus members of the FHDRC are involved with every type of dirt bike competition. They hold motocross, trials, enduros, scrambles, even dirt poker runs. These guys and gals will do just about anything to justify a day in the dirt.

The club sponsors two *major* events every year. One of them is the Cowhouse enduro, and the other is the ISDT Two-Day Qualifier. This latter event is international in scope and attracts the best riders in the nation to Ft. Hood. The Two-Day is similar to an enduro in that the "stages" or sections are timed, but it also has special tests that help to determine winners. These special tests may consist of a motocross track, a hillclimb, a circle track, even a decibel check. The basic idea is to test the *over-*

continued

would you believe that **slurp, yecch, groan, oh no,** and **oooooh** are sounds some people make when they're having fun?

DRIVER

THE TRAFFIC SAFETY MAGAZINE FOR THE MILITARY DRIVER

MARCH 1977

VOLUME 10 NUMBER 10

CONTENTS

FEATURES PAGE

Enduro 1
Can We Drink and Drive Too? 10
Convoy 24
Thirteen Tips For Safe Night Driving 26
The Stale Green Light 27

DEPARTMENTS

Double Clutch 2
Timely Topics 17
The Backyard Mechanic 18
Backfire 28
Emergency ..... Back Cover

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Certain individuals shown in this magazine are not members of the Air Force and therefore do not conform to Air Force grooming standards.

THE EDITOR SPEAKS

DOUBLE CLUTCH

AIR BAG TESTS COMING

More than half a million new cars will be equipped with passive restraints during a two-year period beginning in September 1979 as part of a massive test program. Four auto manufacturers have signed contracts with the Department of Transportation to install air bags or passive belts: General Motors, Ford, Volkswagen of America, and Mercedes-Benz.

The four companies have agreed to bear the entire cost of producing and marketing these cars, and will make the extra equipment available to the general public at a reasonable price.

The government believes that a demonstration program such as this will let the public gain more experience on a voluntary basis with both the benefits and limitations of passive systems without building any antagonism toward the devices. DOT wants to avoid wholesale public rejection of air bags and passive belts before motorists have a chance to drive with them.

These are some of the terms and conditions of the contracts:

■ General Motors will establish production capacity to manufacture 300,000 intermediate-size cars with full-front air bag systems for sale in model years 1980 and 1981.

■ Ford will establish the capability of manufacturing at least 140,000 compact cars with driver-side only air bags in the same model years.

continued on page 26

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Some people get nervous on the starting line, while others do their Cool Hand Luke imitation . . . one thing is for sure, this is the only time today that they'll be clean and dry.

all capability of rider and machine. Ft. Hood's Two-Day is but one stop on a seven-event trail which eventually ends up at the ISDT (International Six Days Trail), to be held in Czechoslovakia this year. The Dept. of the Army assists the FHDRC with the Two-Day and should be congratulated for their efforts in fielding an excellent annual United States ISDT team.

Cowhouse Enduro. So, what's an enduro? Or, better yet, what's a Cowhouse? No, Virginia, a cowhouse is not a government name for a barn . . . it's a river that flows through the confines of Ft. Hood. And since the enduro course uses the Cowhouse River for many of the difficult sections, the FHDRC decided to go with Cowhouse as the name for their enduro (as far as race names go, we think that "Cowhouse" is right up there with "The Great Cannonball Baker Sea-To-Shining-Sea Memorial Trophy Dash").

So, you still want to know, what's an enduro? The name "enduro" comes from the word "endure." Endure is defined by the Random House dictionary as "to hold out against; sustain or undergo without impairment or yielding; to support adverse force or influence of any kind; *suffer without yielding; suffer patiently.*" The last two phases are the key to enduros.

Basically, an enduro is a race from point to point, and having a specific mileage, a specific average speed, and a point system that penalizes riders for being early or late arriving at a series of hidden checkpoints.

It's similar to a time-speed-distance rally for cars, but car rallys aren't usually held in the type of terrain that enduro riders favor.

The Cowhouse Enduro length this year was a little under 100 miles, and the speed averages for the different stages were: 0-10 miles, 15 mph; 10-30 miles, 20 mph; 30-54.9 miles, 18 mph; 54.9 miles-finish, 20 mph. Although it really has no bearing on the enduro, you'll notice that the overall speed average was 18.25 mph.

Eighteen and a quarter miles per hour doesn't sound too fast, does it? Why would anyone call 18 mph racing speed?

The key thing to remember is that 18 mph is an *average* speed! If you were held up in stage 2, for example, for 10 minutes (you're stuck in the mud?) then that 20 mph average suddenly increases to 24 mph.

Even that 24 mph speed doesn't sound too bad, until you consider that four miles of that particular section are in mud flats where you can only go about 10 mph without falling over. Then, of course, you have to remember that you may also encounter a bottleneck, caused by 12 other riders, at a narrow water crossing and that a refuel stop takes time. There's always the chance that you might miss a course marker and get lost, or mechanical malfunctions in the bike, or flat tires . . . the list of possible slow-downs goes on and on.

The final result is that you may find yourself with a 60-minute time limit to complete a section and, because of various problems, only 30 minutes to do it in!

Twenty miles an hour doesn't sound too bad until you consider that it means some miles at two mph, and some at 50 mph!

Overall, an enduro (and particularly the Cowhouse Enduro) is a test of rider skill and machine capability. Riders can and do encounter most types of off-road riding conditions in the same enduro, and a rider who is only good in mud, or only in sand, will find it almost impossible to score well.

As in most other sports, equipment is important. You'll rarely find a straight-stock machine at an enduro. Even the FHDRC warns on their instruction sheet: "We'd recommend that you devote more than the usual time spent in waterproofing your motorcycle." Most ignition systems don't function too well when wet, so the stock bike must get its ignition sealed.

Air cleaners usually must be changed from stock because of dust; chains take abnormal punishment; everything that *can* vibrate loose, *will;* lights that *must* be operational to qualify will burn out.

Each rider realizes that his equipment (including personal protective gear) must be in *top* shape in order to finish an enduro. If you're the type of rider who does pre-ride checks twice a year, you're not gonna finish (and thusly will never win) an enduro.

But Is It Safe? Is an enduro a safe form of competition? IF your body *and* your motorcycle are race-ready, and IF the enduro is as well organized as the Cowhouse, we'll say "yes, it can be almost as safe as observed trials, safer than most other forms of motorcycle competition."

What does it take to get your bike *and* your bod ready? Read the October '75 and May and June '76 issues of DRIVER to find out.

What does it take to run a safe enduro? Let's have a talk with Major Abe Racine and Captain Tom Cyr of the Ft. Hood Dirt Riders' Club.

DRIVER: Since you've held the Cowhouse for four years, it appears you have the safety situation well in hand . . . true?

RACINE: Yes, but a qualified yes . . . when we put on the first Cowhouse, we had the help of both the local Longneck Enduro Team and advisors from the Texas State Championship Enduro Circuit (TSCEC). Without them, we would have been beating our heads against the bricks.

CYR: That's right. It's almost impossible for a base motorcycle club to put on a good, safe enduro without the assistance of someone who's run a few already. We didn't know much about

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insurance, sweep rider scheduling, or anything like that. Oh, we all knew the basics, like how to score the results and how to mark the course, but the important stuff, like how to lay out a *safe* course, what hazards to avoid when considering overall rider skill level, things like that we didn't know . . . thanks to expert help, we *have* learned how to do it, but it doesn't come overnight.

DRIVER: Before we get into the individual safety practices, would you be willing to help out any of our readers if they want to set up an enduro on their base?

CYR: You bet! Just give us a call at 817/532-5386 or write us at Ft. Hood Dirt Riders' Club, P.O. Drawer A, Fort Hood, Texas 76544. We'd be more than happy to give any assistance we can . . . we want dirt riding, and enduros in particular, to prosper, and we can help any club put on a safe, fun enduro that'll let commanders and safety personnel give you approval.

DRIVER: OK, let's get down to specifics. What do you need to do in order to run a good enduro?

RACINE: Obviously, rider protection comes first. You also have to consider spectator and support personnel safety, and land damage and ecological consequences must be evaluated. Let's take rider safety first, because riders are more vulnerable to injury than spectators and support crews.

Personal protective equipment is the responsibility of each rider, with the theory being "if you've got a $10 head, wear a $10 helmet." All helmets have to meet current safety standards, and eye protection is super-important because of the rocks that the rider ahead will kick up and because we run part of the course through trees and brush. Gloves are a must, as are good foot protection and ankle support.

Riders should wear either leathers or trials-type riding suits, again because of the brush. The temperature and weather conditions are other reasons for good outer wear. Most riders wear shoulder pads to protect collar bones, and shin pads for lower leg protection.

CYR: And of course there's the tech inspection and noise check that comes next. Our tech inspection isn't intended to harass riders—it's used to weed out those who are obviously unprepared to ride enduros. Our tech inspections give enough time so a rider can correct discrepancies before the enduro starts . . . we don't want to prevent an entrant from riding, just help insure that his bike is essentially capable of finishing and not leaving him out in the woods with a wheel off.

We check nuts and bolts, spokes, chains, tires, controls and cables, lights, tool kits, spare parts, and fuel systems.

Then we put them through the decibel check. This check is important for two reasons. One, it lets us check for an approved spark arrester, and two, we can verify noise levels. That last part might not sound too heavy, but in these days of impending land closures and complaints from non-riders, it's super-important that we, as riders, make every effort to comply with noise regulations and to maintain a good relationship with the non-riding public. Most of us will admit that an unsilenced two-stroke motor makes a hell of a lot of noise, and *that* noise isn't always music to the ears of the public. The land belongs to them, too, and we shouldn't offend non-riders by either our conduct, or by the amount of noise we make.

RACINE: Another facet of rider protection is the actual course layout. You want to have some difficult sections, or it just wouldn't be an enduro, but you *don't* want to lay out a portion that will put the riders on their ears! What we did was to lay out the initial route with a map, and then go ride the actual terrain. Maps are good indicators of what you'll encounter, but they can't tell you that the hill you've chosen is loose shale, or that the river crossing point is 12-feet deep.

As we ride, we note sections that could cause problems and mark them with caution or danger signs. We may make a course alteration along the way because terrain may be better just a few feet away. When I say "better" I don't necessarily mean "easier." By moving the course a few feet to the left, say, we might come up with a little left turn at the bottom of a gulley that would make the course more "interesting," instead of just a straight ride *through* the gulley.

After the preliminary course is layed out, then we ride it again and begin marking the exact route with colored

text continued on page 9–photos next 4 pages

The Cowhouse Enduro organizers didn't stint on water crossings! Casual riders would do well to remember that crossing streams where the bottom can't be seen isn't normally a good idea.

Sometimes enduro riders get so wet they just don't care any more!

. . . **And then** at the last water crossing, I saw a fish *this* big!

Good technique shown here . . . rider's weight is well back for traction, hand on clutch to prevent stalling. Photo also shows how knobby tires will self-clean when throttle is applied.

continued

Weight well back to lighten front end, and a light touch on the bars . . . this is what's needed for soft ground and sand riding.

Hill climbing isn't really difficult, but if your weight isn't far enough forward you can loop the bike over backwards. This rider misjudged a little and has more speed than he needs. You should have just enough to crest the hill and then stop, so you won't be surprised by what's on the other side!

(below)
Checkpoints are where crowd control is important. Checks are unknown to riders and speeds may be high. Keep spectators and vehicles well away from these areas.

continued

ribbon. On this ride, too, we look for hazards.

On the third time around, we usually take along some less-experienced and younger riders. If we see them having trouble with a certain portion, we'll change it. I take my sons along and if they complain about something, we discuss the problem among the other riders and then make a decision about a change.

About a day or so before the enduro, we go out and double check our warning markers. We do it again the evening before, and *again* the morning of the enduro. We don't want danger markers to fall down, or possibly be misread, or, worse, disappear.

While we're out on one of the preliminary rides, we note where the course crosses roads or travelled paths. We then make up signs to warn riders about traffic ahead. It's usually a good idea to station someone at these crossings during the time the enduro is being run.

CYR: Another thing we require in the way of rider protection is that every entrant wear a plastic bracelet like hospital patients wear. This bracelet should carry info about your blood type, whether you have any allergies or adverse reactions to drugs, and a name and address of next of kin. We're not trying to be macabre, but people *can* get hurt, and this info can save *beaucoup* time in getting first aid.

As far as insurance is concerned, we get ours for about $250 per event. (DRIVER cannot mention specific companies; check with the FHDRC for more info.) Since we let civilians participate and we're AMA-sanctioned, insurance is a must.

Crowd control can be a real bear or it can be easy, depending on how you lay out the course. We try to keep spectators away from the outside of turns, away from the bottom of hills, and restrict them entirely from the high-speed sections. Pit crews and refuel crews are normally safe, because pits and gas points are well marked and speeds are slow.

The rules about behavior in the pits are fairly simple. *No* pit racing, *no* refueling of running motorcycles, no crossing the pit entrance after the first riders have arrived, etc. Pretty much common sense items.

(left)
This picture wasn't taken at the Cowhouse Enduro, but we use it to show why the FHDRC doesn't allow running motorcycles to be fueled! Rider is OK, but crew member is in for a surprise when he finally discovers that the fuel can in his hand is on fire!

RACINE: Up front, we acknowledge that there *will* be people who'll fall down, and people *can* be injured. Therefore, we spare no effort on precautions relative to these instances.

We're fortunate to have the support of the Post Commander here at Ft. Hood, and he's made a Medevac chopper available to us. We realize that not every post can do this, but it's sure a super idea. Most posts will at least be able to provide ambulances and qualified medical assistance.

We also pride ourselves on having one of the best sweep crews in the area.

DRIVER: We can see the purpose of a sweep crew at a HORSE race . . . but why at an enduro?

CRY: Not THAT kind of sweep crew! *Our* sweep crew is a group of experienced riders from the club . . . guys and girls who know the course and the types of hazards we have. Their job is to patrol the course looking for downed or injured riders.

RACINE: And they do a damn fine job too! There are about 30 riders on the sweep crew. They've divided up into groups of five so that there will be five riders per section. They work a "round robin" pattern, that is, one rider will leave the start of a section, another will leave in seven minutes, another seven minutes later, etc. They ride the section and then take a back way to the start of the section. This way, you have the course constantly patrolled by riders in communication with medical help. Sweep riders also look out for "squids" . . . riders who are not entered in the enduro but decide to ride it anyway. These squids can really hurt somebody because they have a nasty habit of riding the *wrong way* on the course! Rounding a fast corner and running head-on into some turkey can ruin your day!

CYR: There is one more thing that it takes to put on a dyn-o-mite dirt event of any kind . . . people! I don't mean bodies, I mean people who are dedicated enough to plan and execute the whole thing. We see events where a club has gotten together and said, "Why don't we run an enduro?" . . . and everybody says, "Yeah, terrific idea," and so-on and so-forth. Then, when it comes time to do the actual work like entry forms, course layout, safety precautions, stuff like that, all you have left is the club president and the dirt captain. Everybody else either wants to ride in the enduro, or will "be away that weekend."

Well, you can't run an event that way. If it does come off at all, lack of sweepers or a badly marked course will cause somebody to get hurt. Then the commander and the safety people step in and say, "Hold on guys . . . you just are *not* gonna run another of those things at *my* base." And you gotta admit they'd be justified in saying that. If the sponsoring club doesn't have enough maturity and responsibility, we're *all* gonna lose out on a good thing.

If you ask the commander for permission to run an event and he says, "Well, Nonesuch AFB ran one last month and they managed to put seven people in the hospital," you're gonna have an uphill battle for a sanction.

So, like we say, get *dedicated* people, people who aren't afraid to work. Get your safety ducks all in a row, support people, medical people, course layout . . . everything you will need. Call *us* if you need help with details. *Then* go to the commander . . . if you've done your homework, he'll probably say yes, and you can put on an enduro that'll knock the socks off the entrants and still be safe.

RACINE: One last thing that we'd like to mention. Our Two-Day qualifier will be held on April 29th and 30th, and May 1st. Anybody who'd like to try their luck is welcome to do so . . . it's going to be a tough event, but any rider who is interested in challenging his physical fitness, along with his bike's integrity, is welcome to compete.

We have a really nice area to visit too. Ft. Hood has some of the best recreation facilities around. We have a rent-a-go-kart track, fishing lakes, campgrounds . . . everything you need for a terrific vacation. Don't hesitate to bring the spouse and kiddies along. It'll be fun to come and watch the national riders compete, even if you're not going to ride yourself. If you want a list of Ft. Hood's facilities (like FAMCAMP) just drop a line to the Director of Special Services, Mr. Bill Stefick. He's a super guy and likes to have lots of people visit "his" post.

Sunday Evening. Well, the Cowhouse Enduro is over for another year. The FHDRC will be putting on many more events this year, but they'll be hard-pressed to top this one.

The weather didn't cooperate, but if you look at the pictures, we're sure you'll see, beneath all the mud, an expression on the riders' faces that looks remarkably like a grin!

We also agree with the riders . . . they said (after they cleaned up!) that the FHDRC "Cowhouse Gang" is a group of real professionals, and that they deserve many thanks for putting on a real "mudder."

Telling a friend out of driving if he's had a few too many brews may not be easy as this woman is discovering, but it is the only way to protect him and possibly yourself and others from potentially tragic consequences. Don't let drinking friends drive.

can we drink and drive, too?

"I am my brother's and sister's keeper . . . and I sure as hell hope they don't forget me when I need them!"

Is the military driver different from any other American motorist when it comes to drinking and driving?

Answer No. 1: Yes! As a group, military drivers are doing a better job behind the wheel than are their contemporaries in the civilian world. Statistics kept by the Army, Navy, Air Force, Marine Corps, and Coast Guard indicate a gradual overall reduction in alcohol-involved traffic accidents among active duty members in the past five years. On the other hand, alcohol continues to be involved in over half of all civilian auto mishaps that result in one or more fatalities.

Answer No. 2: A great big "No!" Individually, military drivers are injuring and killing themselves and paying steep fines, legal fees, and insurance bills and going to jail for drunk driving for the same senseless reasons as are Joe and Jean Civilian.

Drinking and driving, too, not only is an open invitation to arrest but poses a worse situation for the driver and motorists and pedestrians around him. Just two 12-ounce cans of beer in an hour won't make him legally intoxicated but it will usually dull his mental perception, blur his vision, and slow his physical reflexes enough that he unknowingly becomes a hot prospect for a fatal traffic accident.

The good news in support of No. 1 is that various traffic safety training programs instituted by the armed services in recent years, specifically for drinking drivers, are beginning to pay off. Then, too, individual units, bases, posts, stations, and ships are putting more emphasis on preventing their people from driving if they do drink too much.

How About "Average" Drinkers? Until a few years ago, the services were concentrating their efforts primarily on the treatment and rehabilitation of alcoholics and problem drinkers. The average "social drinking" service person who got busted for DWI (driving while intoxicated) or—in some states—DUI (driving under the influence) not only suffered the wrath of the local gendarmes and courts but frequently also that of his commanding officer. His career was then at stake and, regardless of the outcome, he didn't necessarily change his attitude toward drinking and driving. To a large extent, such situations and circumstances still exist—but help for the average drinker has arrived at some key locations and is on the way to many others.

The Department of Defense directed all services (except the Coast Guard which is a component of the Department of Transportation) to develop remedial training programs for problem drivers. Each branch has the same objective: To conserve combat effective-

continued

ness and save lives, injuries, man-hours, dollars, and human suffering by preventing alcohol-related accidents. But each has handled the requirement a little differently. Ultimately, the best features of all programs will probably be exchanged and tailored to fit the special problems of each service and each base.

Take for example the Navy's brand new Alcohol Safety Action Program (NASAP). Built around a highly workable system of cooperation between military and civilian law enforcement agencies and officials, it is a program of alcohol education and accident prevention. It's designed to help Navy members—arrested for DWI and other alcohol-related offenses—before they do serious damage to themselves, their careers, their families, and the Navy.

New Navy Program Succeeding. NASAP was developed in 1974 at the Pensacola, Fla., Naval Air Station with expert assistance from the University of West Florida. Aimed at the alcohol abuser, not the alcoholic, the program was an instant success. Fewer than 5% of all course graduates at Pensacola have been picked up again for an alcohol-related offense.

So successful was NASAP, in fact, that the Navy has established additional, professionally-staffed units at Norfolk and San Diego Naval Bases and plans to create eight more before the end of 1977 at Navy facilities in Charleston, Jacksonville, New London, Orlando, Pearl Harbor, San Francisco, Seattle, and Washington, D.C. The Marine Corps also plans to develop its own ASAPs patterned after the Navy's.

The Air Force, a pioneer in traffic safety education in this country, is handling the drinking driver problem a little differently but nonetheless effectively.

To start with, every Air Force member 18 through 25 receives a minimum of 10 hours of traffic safety instruction upon his initial entry into the USAF. Between his 18th and 30th months of service, he gets four more hours. Professional instructors, using modern audio-visual equipment, conduct the training at 144 Air Force bases and stations around the world. Five more mobile units visit outlying detachments.

Air Force Has Low-Key Approach. This training, which already has been adapted by several states for public use, is designed to motivate each participant to want to drive more safely and includes special emphasis on the alcohol problem. However, if an Air Force member, regardless of age or rank, is arrested for DWI, he is automatically subject to an additional 10-hour, multi-media, classroom course in "Driver Improvement." Other problem drivers, such as repeat speeders, must also enroll in this course, which takes a firm but low-key, positive approach to drinking and driving.

Results of the training have been good, according to Air Force Safety Center officials. Whereas over one-half of all fatal auto accidents in the U.S. involve a driver who has been drinking, the Air Force last year reduced its annual ratio of alcohol-related fatalities involving four-wheeled private motor vehicles to 45% and motorcycles to one-third.

OK . . . enough about why military drivers are different from their civilian counterparts. Remember answer No. 2? We also said folks in uniforms ARE NOT any different—they make the same blunders with booze behind the wheel as do civilian weenies. Coughing up $300 to $3,000 for a DWI rap, facing a possible sentence to the slammer, being demoted, or all three, is painful and humiliating—in or out of uniform.

"It Can't Happen to Me." The one thing nearly all drivers have in common is the attitude, "It can't happen to me." A visit to almost any municipal or police court on a Monday morning will soon change a person's mind. Parading before the judges will be terribly embarrassed men and women from all walks of life. This group will have one more thing in common: Each member had a blood alcohol concentration (BAC) high enough to qualify him as a drunk driver and to be booked for DWI at a local bastille by some friendly officer with a badge.

Would you believe that a recent study by the National Highway Traffic Safety Administration (NHTSA) shows that most Americans feel they don't know any problem drinkers? But the same research also revealed a puzzling inconsistency.

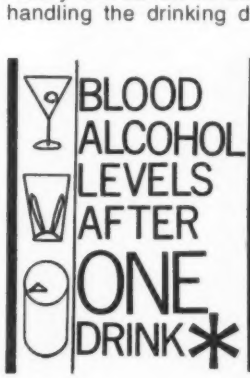
It's a statistical fact that a majority of Americans drink alcoholic beverages, and most consume from three to nine drinks at a time once a week or more. More than half of all drinkers interviewed by NHTSA felt, however, that they had not been involved in any potential drunk-driving situation during the preceding year.

Facts or Fiction? What finally emerged from the data was that most people fail to recognize a potential drunk-driving problem because they simply don't know how to tell when someone is too drunk to drive. Unfortunately, over the years a series of myths about drinking has sprung up in this country until today it's difficult for most persons to separate alcohol facts from alcohol fiction. Here are just a few myths subscribed to by the test group, followed by the facts:

MYTH—52% believed that you can sober up by drinking a cup of strong, black coffee, while 68% believed a cold shower will do the trick.

FACTS—Coffee has never sobered up anyone, unless you take several hours to drink it! Cold showers don't work, either. Only time will get the alcohol out of your system. Alcohol is absorbed into the bloodstream immediately and, because the brain has a high concentration of blood, it reaches the brain and affects the central nervous system within only a few minutes.

continued



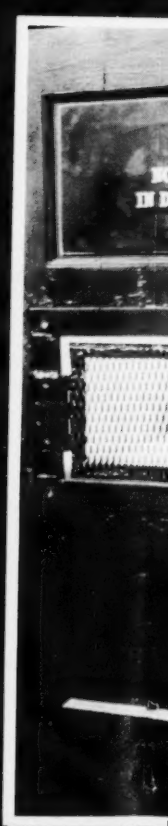
ALCOHOLIC BEVERAGES	Alcohol Content	NORMAL MEASURE	Alcohol Content	Body Weight in Lbs. 100	140	180	220
Beer	4%	12-oz. Bottle	(Oz.) .48	.04	% .03	.02	.02
Wine	12%	3-oz. Glass	.36	.03	.03	.02	.02
Liqueur	40%	1-oz. Glass	.40	.03	.03	.02	.02
Distilled Spirits	45%	1-oz. Glass	.45	.04	.03	.02	.02
Mixed Drinks	30%	3½-oz. Glass	1.05	.08	.06	.04	.04

* This constitutes estimated potential blood alcohol levels that can be achieved within a normal drinking period.

Driving home late at night, not speeding, very little traffic to worry about, but simply unable to guide his car in an ordinary freeway lane without weaving a little, a motorist is suddenly confronted by what may become the most costly, humiliating incident of his lifetime.

Arrested for DWI, the shocked driver is transported to a nearby police station for a scientific breath machine test and legal determination of his blood alcohol concentration . . .

HEY, MAN! Y'KNOW WHAT'CHER STAGGERIN' ACROSS?
WHAT'S THAT, MAN?
YER STAGGERIN' ACROSS THE STATE-BY-STATE ALCOHOL CONCENTRATION LAWS. THAT'S WHAT'CHER STAGGERIN' ACROSS.
WHAT'S IN THIS STUFF? WE'RE SUPPOSED TO BE PINK?



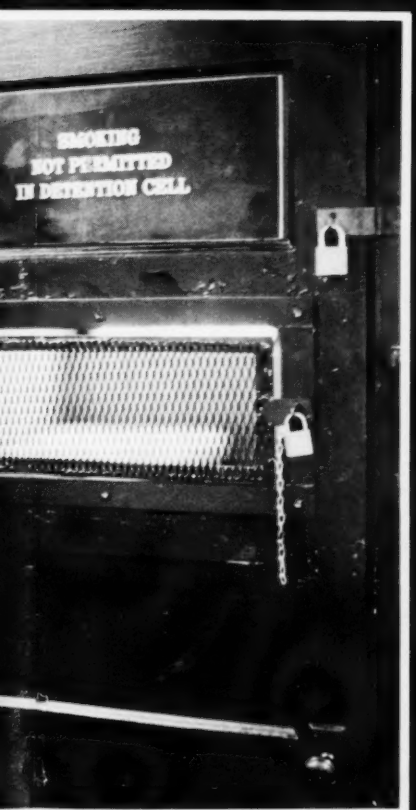
A detention cell DWI suspects are inebriates . . . his r

IF YOU DRINK, CONSIDER AVOIDING SAN SALVADOR

San Salvador is the capital of El Salvador, a small, picturesque island in the Eastern Bahamas believed to be the initial landing point for Christopher Columbus' discovery of the New World in 1492.

Stately San Salvador also is known for its handling of motorists convicted of drunk driving. It executes them.

He's charged with a misdemeanor drunk driving rap and now comes fingerprinting and booking into jail . . .



n cell like this one may be "plush" . . . most cts are confined to a "drunk tank" with other . his real problems are just beginning.

can we drink and drive, too?

continued

Unfortunately, it's slow to go. Once in the bloodstream, alcohol must be broken down by the liver and oxidized. That is, it's turned into water and carbon dioxide and then dispelled. The liver is able to convert less than one-half ounce of alcohol per hour. No amount of coffee, cold showers, fresh air, or exercise will speed up the process. These home remedies merely make you a wide-awake drunk.

MYTH—70% believed that a can of beer is less intoxicating than an average drink of liquor.

FACT—Beer is no different than bourbon or vodka or any other alcoholic beverage. One 12-ounce can of beer or one 3-ounce glass of wine is about equal to one average "highball."

MYTH—80% believed that sticking with one kind of drink is less intoxicating than mixing drinks.

FACT—The major cause of hangovers is drinking too much. Period! The effect of alcohol is about the same, no matter what bottle it comes from or what beverage you mix it with. The amount of sugar and other ingredients in the various drinks and beverages you consume, however, may add to your miseries and make you barf 'til you want to die.

All other factors being equal, you can get just as wrecked on straight booze and water as you can by downing equal parts of alcohol in margueritas and manhattans before dinner, a couple of glasses of vintage sherry during dinner, a brandy alexander and a grasshopper after dinner, and a cup of Irish coffee "for the road." A bloody mary the next morning will only prolong your hangover.

Drinkers Split Into Two Groups. NHTSA says many people don't know that intoxication has nothing to do with willpower or a strong constitution. They are unaware that it's a scientific measurement (BAC) of alcohol consumption to body weight. Also involved are the length of time since drinking began and since the last drink, and the quantity and kind of food in the stomach at the time of drinking.

As a result of its study, NHTSA divided the drinking public into two general categories based on what actions each would likely take to avoid drunk driving and what might motivate them to act. The first group was identified as "social conformers" and the second as "aggressive restrainers."

Research showed that the first group, if convinced that it IS the expected "social norm," would be willing to call a taxi for an intoxicated friend, personally drive him home, or let him spend the night. The second group, if persuaded it might save his life, would be willing to take almost any action necessary to prevent an intoxicated friend from driving.

Now, here's where you fit into NHTSA's research. Remember those nationwide television commercials last December which suggested you should help a friend who drinks too much and wants to drive home? They were the direct result of the federal study.

One television spot featured a bartender trying to persuade a man to drive his intoxicated friend home—it was designed for the first group, the "social conformers." Another commercial featured a man who had hidden his friend's car keys and fended off the resulting argument. This was produced for the "aggressive restrainers." Into which category do you fit? Would you be willing to prevent a drunk friend from driving home? Well, some agencies have taken this challenge seriously and are doing something to help you do just that.

Far East Goes "40-Proof." Stimulated in part by an article on drunk driving published by DRIVER, the Social Actions Office at Headquarters Fifth Air Force in Yokota, Japan in 1972 developed a motivational campaign imaginatively labeled "Operation 40-Proof." Supported without reservation by all Fifth Air Force commanders, the program challenged all personnel, military and civilian, and their families to "prove" they could drink sensibly without accident or incident for "40 days" from before Thanksgiving until after New Year's Day. Traditionally, this is the highest accident-rate period of the year.

In addition to lots of publicity, "40-Proof" featured several then-unique, anti-drunk driving techniques. Military party-goers were bused between their housing areas and on-base clubs every half-hour beginning early New Year's Eve; security police erected twisting lanes of traffic cones at base gates to encourage motorists either not to drink too much or to let someone else do the driving if he failed to find his way through the maze; club employees wore bright lapel badges reminding patrons to drink sensibly; and club bartenders

continued

continued

called pre-designated squadron representatives for patrons who, after drinking too much, still had to drive home (no disciplinary action was involved).

"Operation 40-Proof" was a resounding success in the Far East for three consecutive years. Then in March 1975, Air Force personnel headquarters in the Pentagon recommended the program be adopted worldwide for all hazardous holiday driving periods. Wurtsmith AFB, Mich., successfully copied "40-Proof" during the following Christmas holidays, and most other Strategic Air Command bases followed suit under the name, "Operation Safe Season."

Whose Brother/Sister Are You? Today, there are dozens of techniques—limited only by the imaginations of military commanders and their project people—being used to motivate all servicemen and women and their dependents not to drive if they overimbibe.

As one social actions officer explained, "We're finally beginning to convince ourselves that we are our brother's keeper and unless we look after him, too, no one is going to look after us when we've also had one too many drinks before hitting the road."

"Did you know," he continued, "that more military members kill themselves in private motor vehicles than by any other method—primarily because of drunk driving? It may sound corny, but the best way to save our skins and to help our country at the same time is simply for each of us to (1) voluntarily limit our drinking when we drive; (2) always arrange in advance, if possible, for someone to drive us home or to stay overnight if we do drink too much; and (3) insist on driving our drunken buddies home or putting them up for the night—whether they like it or not."

So, we ask, what' so corny about saving one's hide or maybe avoiding a DWI arrest and going to jail and paying a big fine and attorney's fees and embarrassing ourself and our family and maybe facing our commander or supervisor and maybe losing our driver's license or paying huge auto insurance premiums for years to come and on and on and on . . . ?

Symbolic of Wurtsmith AFB's year-round campaign against drinking and driving is this circular shield which decorates about 60 base vehicles. The international "No Alcohol" motif is believed to have been used first by Zaragoza AB in Spain then was copied by Yakota AB, Japan after DRIVER publicized it in 1972. Photo by Anthony J. Minchin

Steering through a narrow lane of traffic cones looks easy unless you've had one too many drinks as motorists approaching the main gate at Wurtsmith AFB, Mich., occasionally discover. Drivers knocking down a cone usually are detained until another person can replace them behind the wheel. Disciplinary measures are seldom required. Photo by Anthony J. Minchin

Seeing things? If the road ahead looks something like this and you're not sure about the approaching car, pull over quick and let someone else drive.

DRIVER TOPICS

Crash Photos in January '77 Issue

We have had a number of adverse comments from safety folks about the crash pictures and caption on pages 6 and 7 of the January issue. Evidentally we didn't make it clear in the caption that this is *not* what we expect a good motorcycle course to accomplish!

We put the pix in as a graphic example of what can happen if a rider isn't in tune with his surroundings. If you don't pay attention to traffic and road conditions, you may find yourself in a crash situation like this. As we said in the article, this is about the worst choice you could make in the event of an unavoidable collision.

So, we apologize if any riders or readers thought we advocated this type of crash avoidance . . . we don't; and neither does the Air Force or any motorcycle course we've ever seen.

Silicone Brake Fluid

The December issue of DRIVER carried an article about Silicones and their automotive applications. We're happy to say response has been tremendous. One possible problem has cropped up, however. It seems that some people purchase silicone brake fluid and then add it to their brake system *without* completely draining and purging the system of the old fluid. This effectively defeats the purpose of the silicone fluid, and in some cases may result in a lessening of braking ability because of the incompatibility of silicone fluid with some conventional fluids.

So, the word from here is, *don't add* silicone fluid to your brake system . . . the system must be *cleared* of the old fluid and then refilled with the silicone fluid.

Along with Mr. Alan Anderson, who wrote the article, the military service has its own experts on silicones. If you have *any* questions about the use of silicone brake fluids or other silicone products, call or write:

Mr. Maurice LePera
or
Mr. Jim Conley
Dept. of the Army
U.S. Army Mobility Equipment Research and Development Cmd.
Ft. Belvoir, VA 22060
AUTOVON: 354-4594

Minnesota Motorcyclists

A study of motorcyclists who were fatally injured in accidents in Minnesota during 1975 has indicated that the motorcyclists themselves were largely responsible for their own mishaps. The Minnesota Department of Public Safety compiled information on the deaths of 61 motorcycle operators and two passengers and found "indications of carelessness, lack of experience, and unfamiliarity with the vehicle on behalf of the cyclist." The study showed that only half of the motorcycle operators possessed valid motorcycle licenses, more than one-third did not own the vehicles they were operating, and more than one-third of those tested for alcohol had blood alcohol concentrations (BACs) of .10 per cent or higher. Police reports in nearly two-thirds of crashes indicated that the motorcyclists were at fault.

Consumer Action Panels

Do you know about CAPs—Consumer Action Panels? If you have a problem with a car, the Consumer Action Panels can help.

But sending your complaint to the CAP is not the first step, according to *Consumer News*, the twice a month newsletter from the Office of Consumer Affairs. First you should try to settle the problem with the dealer or store. If you can't get satisfaction, go to the manufacturer.

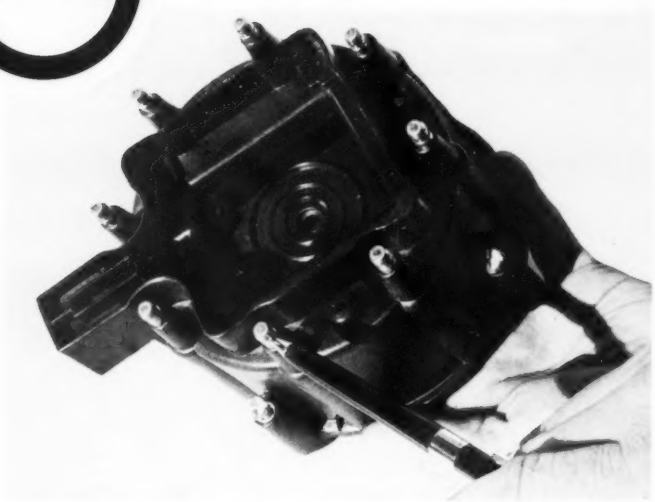
If they can't help, then go to the CAPs.

When the CAP receives a complaint, a staff member will contact the manufacturer to ask that they look into the complaint further, and notify the CAP of any action. If the consumer is still not satisfied, the staff member refers the complaint to panel members for review. While manufacturers and retailers are not required to follow the panel's recommendations, most will do so.

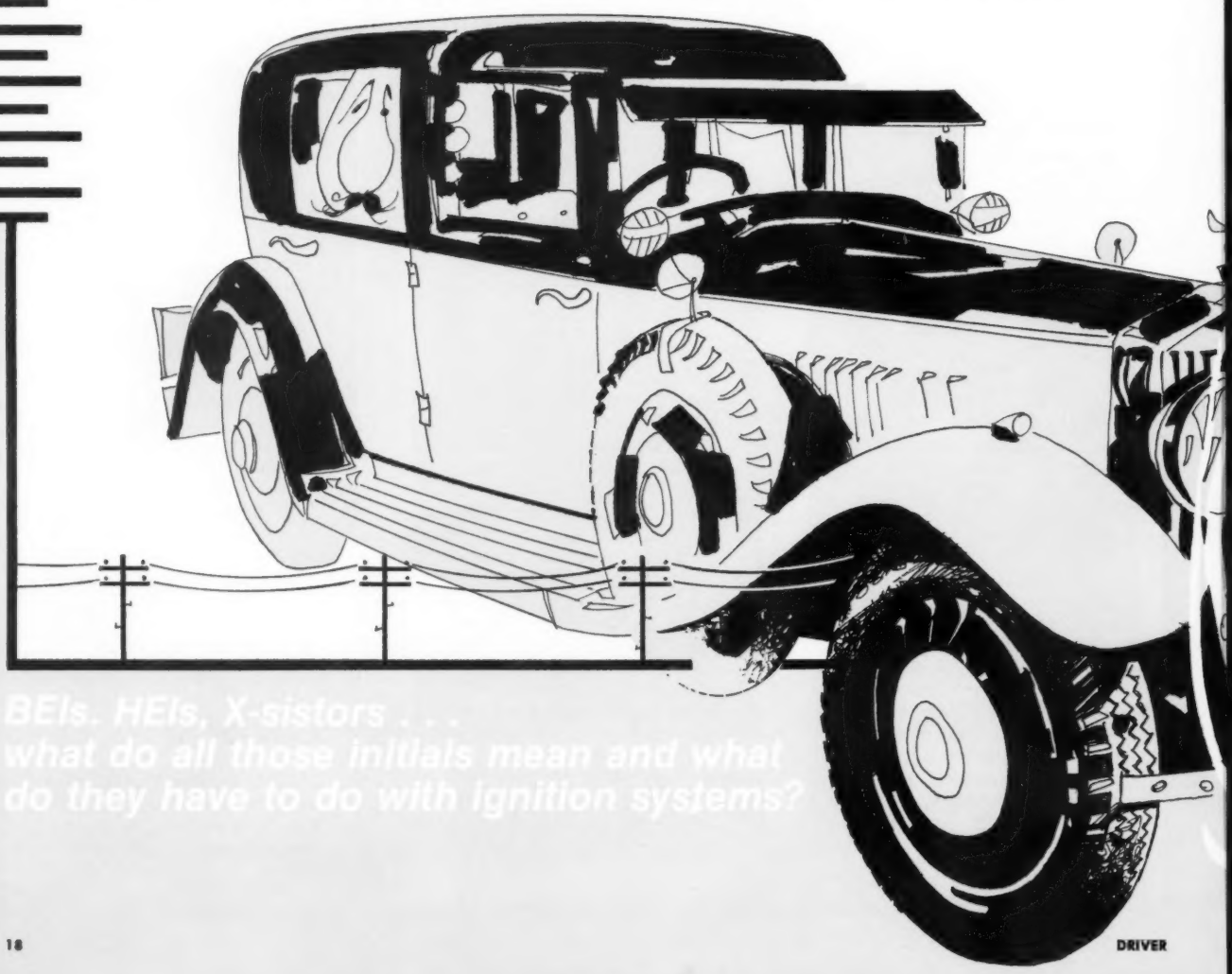
There are 18 AUTOCAPs across the country, and an additional 18 AUTOCAP organizations work to resolve car complaints, although they do not have formal or regular panels of decision makers. To find out if there is an AUTOCAP serving your area, check with your local or state Automobile Dealers Association, which sponsors the various AUTOCAPs, or with the local Chamber of Commerce or Better Business Bureau.

Correction

JANUARY DRIVER, PAGE 5, HEADING 15 . . . 4-way stop sign is a misprint. It should read *2-way* stop sign.



left: One nice thing about the new ignition systems is that it's pretty difficult to hook them up incorrectly after a component change. Ford Dura-Spark control module shows how spade-type male connectors and keyed connector housings are constructed to minimize assembly errors. ***right:*** GM HEI distributor cap is much changed from conventional cap. Large well in cap is where ignition coil goes, and projection on left is electrical connector. Pen points to new design of spark plug wire connectors.



BEIs, HEIs, X-sistors . . . what do all those initials mean and what do they have to do with ignition systems?

IGNITION SYSTEMS PART 2

In the last BYM Back to Basics, we covered the operation of the conventional, or Kettering, ignition system. We showed that the purpose of the ignition system was to develop high voltage, time the high voltage delivery with respect to engine speeds, and then direct the voltage to the correct spark plug.

Today's ignition systems accomplish exactly the same thing, but they do it with greater accuracy, higher speed, and, generally, less components.

No Points. It was long hoped that, eventually, an ignition system could be designed so that the contact points common to the Kettering system could be eliminated. The need to eliminate points was caused by several reasons. One, points wear out quite rapidly, considering the life of other automotive components. Two, at higher engine speeds, conventional points tend to "bounce," that is, they stay in the open position when engine (and therefore distributor shaft) speeds are high . . . the points just do not have enough spring tension (or enough time) to close. Three, the rubbing block, a fiber device attached to the points, wears quite quickly. As it wears, dwell changes. Along with the change in dwell, rubbing block wear will not allow the points to open to the specified dimension and will cause them to burn more easily.

Early attempts to eliminate points resulted not in point elimination, but in reduced voltage carried by the points. Transistor ignitions solved the problem of point burning and wear, but didn't solve the other problems inherent in contact points.

The mid-sixties marked the beginning of the end for the Kettering ignition as we know it. New strides in electronic technology enabled manufacturers to develop breakerless, high-energy ignition systems that did away with the problems associated with conventional ignition systems.

Not only are the new ignition systems more reliable than conventional systems, they deliver higher energy levels, they are easier to work on, and they have become the first link in a chain (along with carburetion and exhaust) that will allow us to strangle harmful exhaust emissions.

Transistor Ignition. As we mentioned earlier, transistor (X-sistor) ignition was the first attempt to really improve the Kettering system. Transistor systems have some advantages to the Backyard Mechanic because they can be easily installed in any conventional system, and really do increase point life. A good aftermarket transistor system will also increase voltage levels and thereby more fully combust the fuel/air mixture with a resultant slight increase in power and mileage.

How It Works. A transistor is a small electronic device that controls current via the conductive properties of an element known as germanium. The word "transistor" originates from the term "to transfer resistance."

The transistor in an ignition system provides a means of furnishing greater current to the ignition coil with an accompanying larger secondary voltage for spark plug firing. At the same time, it supplies less current to the ignition contacts thereby prolonging their life. This whole deal is accomplished by using two interrelated primary ignition circuits whereas the Kettering system uses only one such circuit.

continued

The system consists of a base circuit (low voltage *trigger* circuit), coil primary (collector) circuit (low voltage *primary* circuit), and a secondary (high voltage coil) circuit. Current will not flow in the primary circuit unless a current is flowing in the base circuit. A very small current in the base circuit allows a much larger current flow in the primary (collector) circuit.

In actual operation (see Fig. 1), a ½-amp current flows from the battery through the ignition contacts, a common .33 ohm resistor, the ignition switch, and back to the battery.

This small current flow (let's call it control current) permits a large 12-amp current to flow from the battery through the ignition coil, the .43 ohm collector resistor, the toroid, the transistor collector and emitter, the common .33 ohm resistor, the ignition switch, and back to the battery. Since this circuit supplies the power to the ignition coil, we refer to it as the power, or coil, circuit.

During the dwell, when the contact points are closed, current flows in both circuits. When the points begin to open, the collapsing magnetic field produced in the toroid sends a *reverse* pulse through the control circuit, stopping all electron flow in the control circuit. Because the control circuit triggers the power circuit, current stops in the power circuit, too.

This causes the magnetic field produced by the coil primary windings to collapse, and sends very high voltage (generated by inductance in the coil secondary) from the coil to the spark plugs. In addition, high voltage is also induced in the primary windings of the power circuit.

Normally, this would be sufficient to cause transistor destruction inasmuch as the induced voltage instantly rises above the load level of the transistor until it reaches the breakdown level of the zener diode. So, this is the reason we incorporate the condenser in the power circuit . . . it absorbs the high voltage current and keeps it within load limits until the zener protection level is reached. Discharge of the condenser voltage from zener level to system voltage takes place by reverse flow through the power circuit, except that the transistor is bypassed by the diode which freely passes this reverse current.

We then close the points and complete the cycle by causing current flow in the power circuit.

Ford Dura-Spark. In the Ford Dura-Spark solid-state system, the conventional breaker plate and cam assembly is replaced by a *magnetic* signal-generating system which detects the distributor shaft position and sends electrical pulses to a control module. The module switches off the flow of current to the coil primary windings, inducing the secondary windings to build up a high voltage charge which is then directed to the spark plugs as in a conventional system.

The control module contains timing circuits which then close the primary circuit, allowing it to build up a sufficient charge that will enable the secondary windings to produce the high voltage required to fire the next cylinder. In effect, this timing action sets the dwell. (Remember dwell? The period of time that the points in a Kettering system remain closed.) Because of the inherent stability of the control module, dwell adjustments will never be needed with the Dura-Spark system.

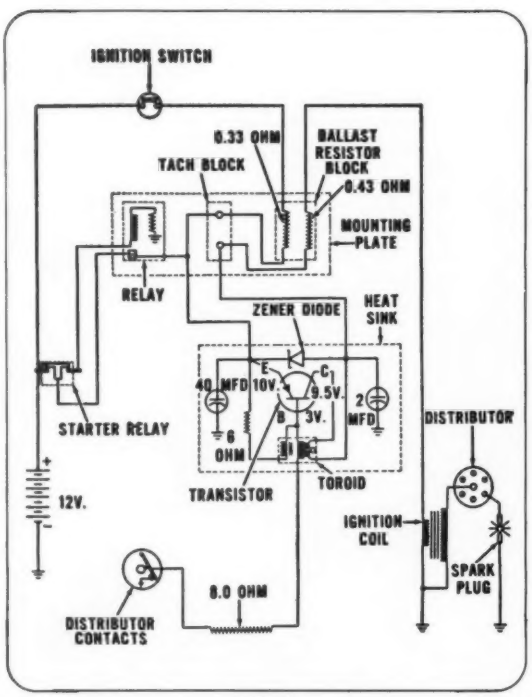


FIG. 1

Ford transistorized ignition system is explained in text. *(Schematic courtesy of Ford Motor Co.)*

Signal-generating systems generally follow the pattern of a gear-shaped iron rotor or armature, driven by the distributor shaft, which rotates past the stationary pole piece of a pickup coil. The number of teeth on the armature correspond to the number of cylinders in the engine. A weak magnetic field is provided by a permanent magnet which is part of the pickup assembly.

As each tooth of the armature moves away from the permanent magnet, an electrical signal of opposite polarity is generated in the pickup coil (stator). As the armature tooth nears the magnet and moves away (as the distributor shaft rotates), the signals generated go from positive to negative; however, when the armature tooth and the stator tip are aligned, the signal is zero . . . between positive and negative.

This zero signal tells the control module to turn off, producing the same effect in the coil primary circuit as the opening and closing of contacts in a conventional ignition system; it "breaks" the primary circuit.

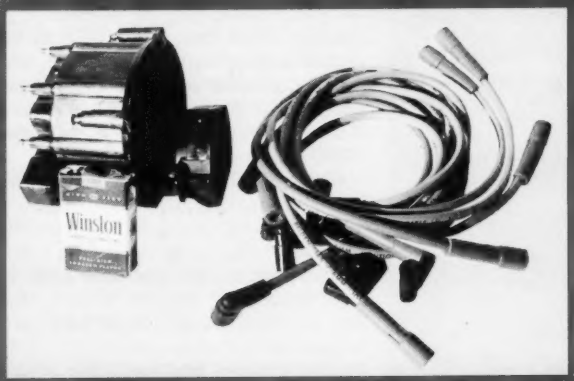
The sudden stoppage of current in the ignition coil primary windings causes the magnetic field to collapse and induces high voltage in the coil secondary.

As engine speed increases, the time span between alternations of current (the zero signal) decreases. In this way the control module knows when to open and close the primiary circuit.

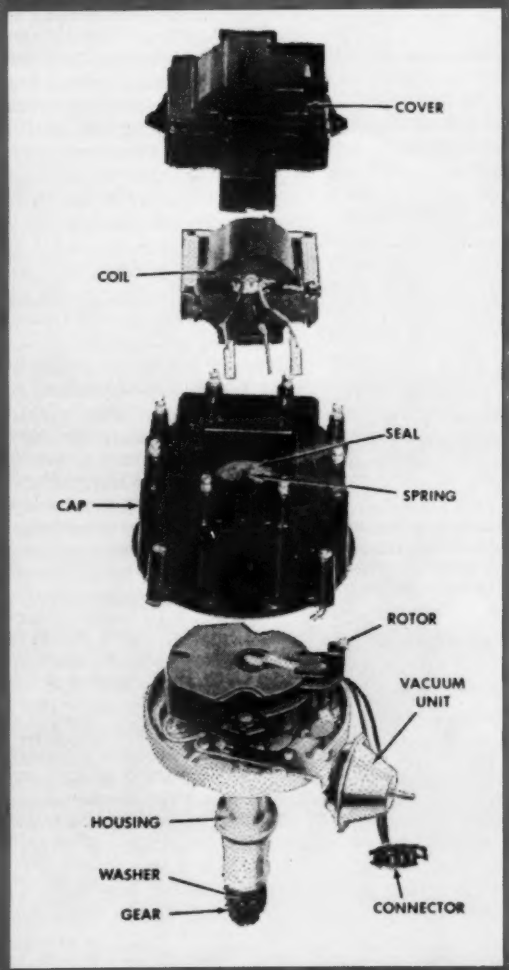
NOTE: Ford advises that the '77 Dura-Spark system uses a coil current regulator to provide a stall shut down feature. When the engine stalls, the module shuts off and locks. Unless the ignition switch is first turned to the start position, the module will not provide any spark.

Readers should also note that because of the increased high voltage, new spark plug wiring systems are being used. The most apparent difference is the larger diameter of the plug wires, up from 7 mm to 8 mm. Also, silicone

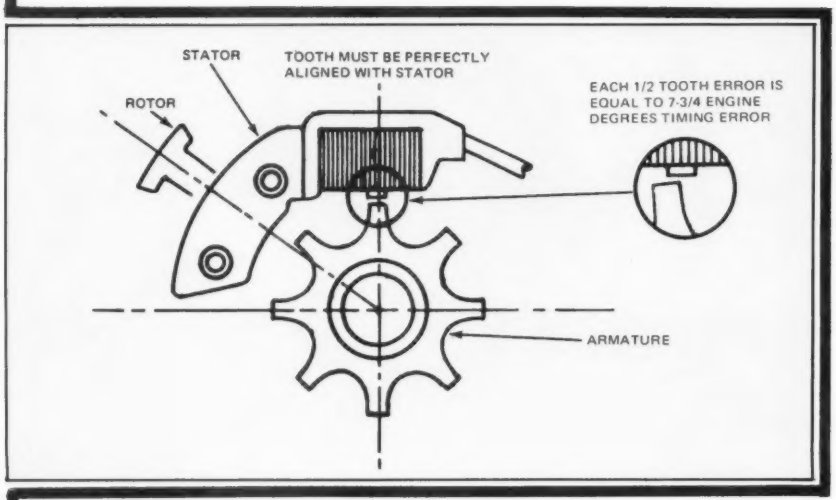
continued



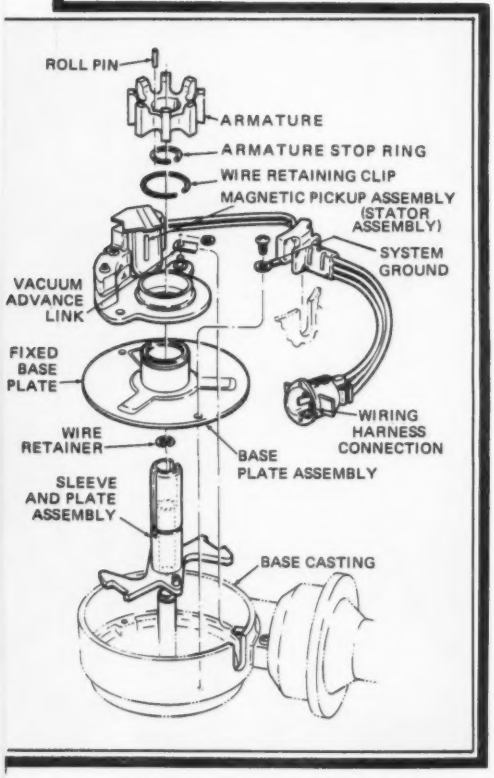
left: Large size of GM HEI distributor cap is emphasized by cigarette pack. Plug wire size has been increased to 8mm and has female connectors on both ends. Female connectors are used to negate possibility of voltage leaks. **right:** Would you believe this is a rotor? Several users of this GM HEI rotor report that the upright portion may crack where it joins the main body. If your '77 runs rough, check for cracking of the upright.



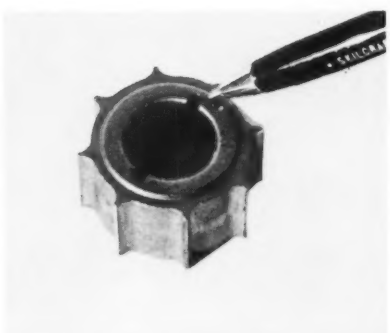
left: Exploded view of GM HEI distributor shows how all main ignition components fit into housing. Design is efficient, compact, and easily serviced. *(Courtesy of General Motors Corp.)* ***right:*** Ford Dura-Spark armature and stator. Armature is gear-shaped toothed wheel, stator is plastic encased magnet. Like other new systems, connectors are used to insure correct wiring.


STATOR
TOOTH MUST BE PERFECTLY ALIGNED WITH STATOR
ROTOR
EACH 1/2 TOOTH ERROR IS EQUAL TO 7-3/4 ENGINE DEGREES TIMING ERROR
ARMATURE

Static timing position of stator for eight-cylinder engine. Air gap between stator and armature must be adjusted when new stator is installed. Adjust air gap *only* with non-magnetic feeler gauge (brass or plastic).



Exploded view of Ford Dura-Spark distributor shows simplicity of design.



Armature for Ford system has two indexing grooves. Armature cannot be installed backwards or upside down, but indexing roll pin must be installed or armature will shift positions on distributor shaft.

Control module for Chrysler system is firewall mounted and has pin connectors for ease of replacement. U-shaped device is heat sink for transistor in center. Heat is the enemy of solid-state devices, so if a module goes bad rapidly, move the new one to a location not so near the engine, or where a flow of cooling air is available.

grease, either Dow 111 or GE CG627 is required wherever insulator areas "interface" (connect) with the distributor cap, coil, or plugs. This silicone grease is necessary to prevent high voltage runoff.

Chevy HEI. The Chevrolet High Energy Ignition was introduced in January 1974 and was used primarily on their high-performance models. It is similar to the Ford breakerless and other no-point systems in that the contact points are eliminated and high voltage is "triggered" by an electronic signal, not by the making and breaking of conventional points.

The HEI system consists of a completely new and different distributor assembly that combines all the ignition components into one solid state electronic unit. The distributor housing encloses the vacuum and centrifugal advance units, electronic module, pickup coil and pole piece (known in other systems as the stator and reluctor), timer core, capacitor, rotor, and distributor shaft. The distributor *cap* houses the ignition coil and is tasked with directing high voltage impulses to the spark plugs as in conventional systems.

A convenient tachometer (engine speed gauge) connection is incorporated in the wiring connector on the side of the distributor (except '77 models); however, it will activate only certain models of electric tachs . . . better check with your Chevy dealer before you buy a tach for this system. NOTE: The ta-

chometer terminal on the distributor cap must *never* be grounded since grounding can damage the circuitry of the control module. When making compression checks, disconnect the ignition switch connector from the HEI system.

The wiring used with HEI is a carbon-impregnated fiber-glass conductor encased in an 8 mm silicone rubber jacket.

As in the Dura-Spark system, the HEI is magnetically controlled, so it's theory of operation is the same.

CDI. One of the most popular aftermarket ignition systems is the CDI, or Capacitive Discharge Ignition. The CDI operational theory is extremely complicated and lengthy, so we won't go into it here. Suffice to say that CDIs *are* different in theory and produce different results than transistor or magnetically-controlled electronic ignitions. Magnetically-controlled ignitions produce a relatively long-lasting spark that gives complete combustion and therefore, low emissions. The CDIs produce a short-lived voltage of extremely high amplitude (40,000 volts +) that is capable of firing spark plugs under difficult conditions such as fouled plugs or extremely high compression.

Remember, in a CDI system the points are retained, but they carry far less current than they do in a Kettering system. Since the points carry less current, they encounter fewer problems than the conventional systems' points do.

CDIs employ a solid-state device to trigger the high voltage, and this trigger, or electronic switch, is called a silicone-controlled rectifier or SCR.

SCR operation as concerns CDIs is, again, very complex. If you wish to know more about the operation of CDIs,consult one of the reference works we've listed at the end of the article.

Which One Is For You? If you have a new car, of course the choice is already made for you. It is nearly impossible to attempt to convert the new HEI or Dura-Spark-equipped cars to operate with CDI or transistor ignition. In actuality, you would be dealing yourself a losing hand. The new systems are specifically designed for each car to work with other components of the emission control system, and those emission systems won't work with any contemporary aftermarket ignition system without an "extensive" rework.

If you own an older car with conventional Kettering ignition, then the aftermarket systems are for you. Transistor systems work well on the family car and are relatively inexpensive. CDIs cost more, but their performance is what you need if you have an older car or truck that has a slightly tired engine or that you use to carry or tow heavy loads.

In a future article, we'll give you the straight skinny on spark plugs and how they can really make or break the performance of *any* ignition system!

NOTE: There just isn't enough space in DRIVER to go into the whole operational theory of solid-state devices and associated circuits. If this article whets your appetite, or if some circuits are confusing, may we suggest the following reference works . . . most should be available at your post library.

Practical Electricity by R. G. Middleton (Audel)

Transistor Technology by Bridgers, Scaff, and Shive (Bell Lab Series)

Electronics by Robert Irving (A. Knopf)

Semiconductor Fundamentals by Seidman and Marshal (Wiley)

Dictionary of Electrical Abbreviations edited by D. H. Polson (Odyssey Press)

GLOSSARY

Ballast: A current-limiting element. A ballast resistor is a resistor used to limit the current and keep it under control.

BEI: Breakerless electronic ignition. Has no contact points.

CDI: Capacitive discharge ignition. Uses points, but points carry less current than Kettering system.

Heat Sink: A device used to absorb heat produced by electrical components. By releasing equipment heat to atmosphere, sink prevents overheating of heat-sensitive electrical components (like transistors).

HEI: High energy ignition.

Reluctor: The armature in breakerless ignition systems. In conjunction with a stator, it eliminates contact points.

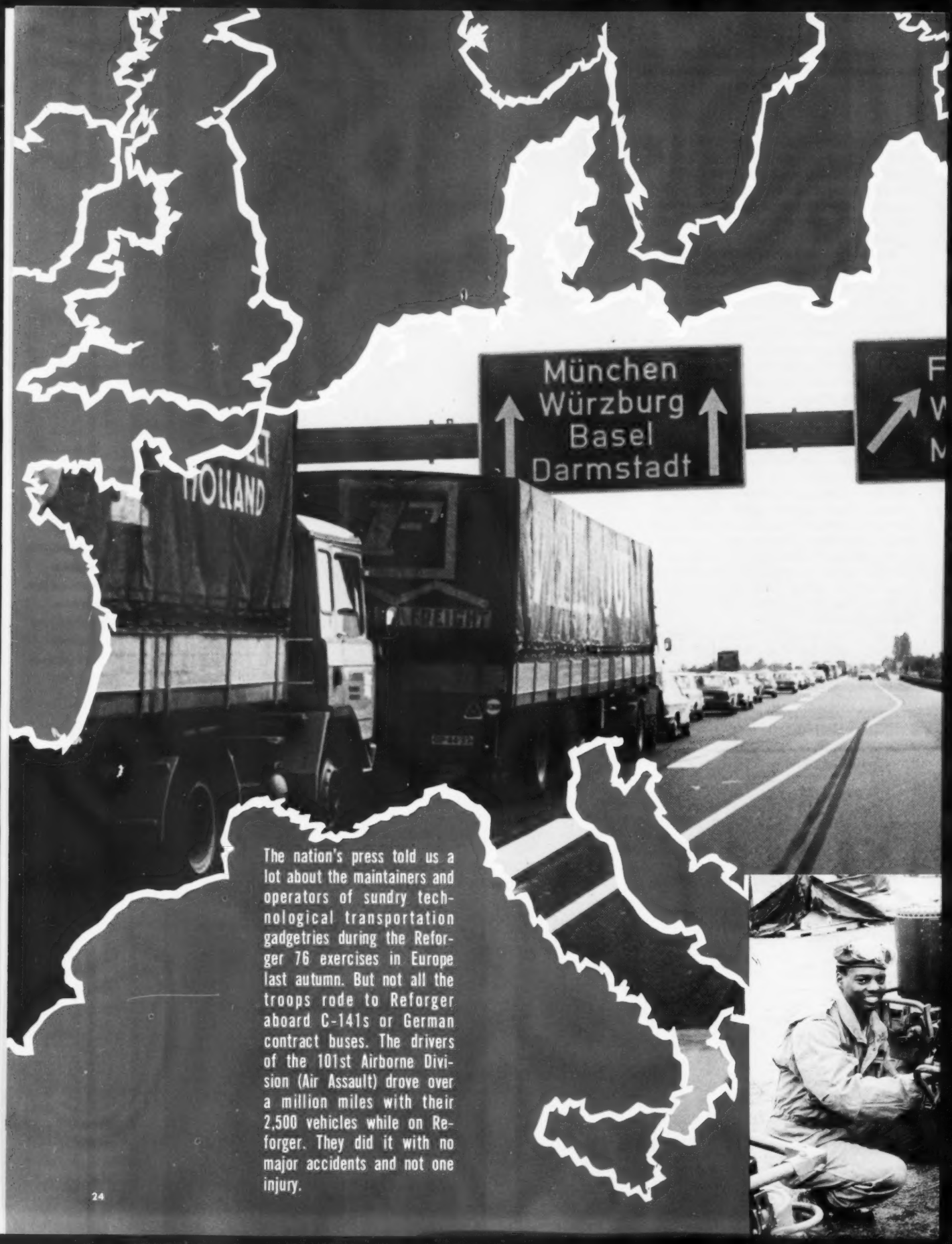
SCR: Silicon controlled rectifier. A solid-state device similar to a transistor in that it provides a current path consisting of a solid material (silicon). Acts as electrical "switch."

Stator: Replaces contact points when used in conjunction with reluctor. Usually consists of a magnet imbedded in plastic, but may also be a light-sensitive device when used in an LED (light-emitting diode) triggered ignition.

Toroid: A small doughnut-shaped iron core around which coils of wire are wound similar to a transformer.

Transistor: A non-vacuum semiconducting combination of chemical elements used in electrical circuits in place of vacuum tubes. Requires only low voltage to operate.

Zener Diode: A voltage regulating device. Two-element semi-conductor device used to control direction of current flow.



The nation's press told us a lot about the maintainers and operators of sundry technological transportation gadgetries during the Reforger 76 exercises in Europe last autumn. But not all the troops rode to Reforger aboard C-141s or German contract buses. The drivers of the 101st Airborne Division (Air Assault) drove over a million miles with their 2,500 vehicles while on Reforger. They did it with no major accidents and not one injury.

CONVOY

by
Command Sergeant Major
DONALD CUBBISON
2/17th Cavalry
Fort Campbell, Kentucky

After a series of sudden starts and stops, the convoy finally began to move again. It had been on the road for more than three hours but had travelled only 25 miles.

The wet chill penetrated the drivers' bones so that the open jeep ride was almost unbearable. Kilometer after kilometer, German scenery went by unnoticed and unappreciated. A decided effort had to be made to return the friendly waves of small children who smiled from passing cars, sidewalks and windows in the seemingly endless parade through town after town.

It became important to do something —anything—to take one's mind off the cold and the rain. Oldies but goodies were remembered from out of nowhere and hummed or softly sung to oneself. Hands beat against legs to revive circulation, feet were stamped against floorboards in an attempt to kindle some warmth in what felt like frostbitten toes.

Cars, mostly compact and European, whizzed by at great bursts of speed. The military procession became an object of stares from passing motorists whose nationality could be identified by a white disc on the rear of their cars. The letter "D" for Deutchland, "NL" for Netherlands, "I" for Italy, "B" for Belgium and so on. In their heated and rain-proof Mercedes, BMW, VW, Fiat, Opel and Capris, the drivers and passengers seemed unconcerned, though mildly curious, about the dreary line of jeeps, Gamma Goats, trucks and trailers piled with equipment and filled with soldiers in combat dress.

Had one of those nonchalant Europeans been forced to trade places with an unfortunate soul in a jeep, his somewhat apathetic stares would have been miraculously transformed into one of compassion, perhaps even pity.

The caravan labored on, inching its way forward at a sometimes unbelievably slow speed. Steep hills became an instant enemy of Gamma Goats hauling trailers. Open spaces with no trees or buildings to ward off the wind became the enemy of everyone. Even the briefest rays of sunshine were cause for joy, but these were rare and all too quickly gone.

The first rest stop was almost passed by an over-anxious MP who seemed bent on making things even more miserable for the miserable. When the vehicles finally halted they had passed the intended rest area, too far to trudge back for the hot coffee which would have been as welcome as a warm day in Kentucky.

The second rest stop was handled much more professionally. Hot coffee was available, but only after hiking the entire length of the convoy.

The caravan moved on after being refueled and finally passed Wurzburg, the last big city before the voyagers would finally dismount at their destination. It was mid-afternoon, the warmest time of the day, but the weatherman delivered one final blow—blasting the wind across open fields, knifing through already cold bodies that were too numb to care.

Convoy speed was finally reached just 15 kilometers short of the release point; far too late, but the end was near. It had been a ten-hour trip in all. Ten long, cruel hours across a mean 170-mile stretch of Germany. It was a trip from one tent to another, from one lonely place to another with no slack in between.

It was a day to remember or a day to forget. It all depends. But it was a driver's day.

(right)
Twenty-five miles in three hours means a lot of "hurry up and wait."

(below right)
Miles of jeeps, Gamma Goats, trucks and trailers piled with equipment. And everywhere soldiers in combat uniform.

(below)
Don't let those cheerful faces fool you—it's cold!

DOUBLE CLUTCH

continued from page 2

■ Mercedes-Benz will manufacture and ship to this country for sale in model year 1980, 750 sedan cars equipped with driver-only air bags and an additional 1,500 cars similarly equipped in 1981.

■ Volkswagen will produce not less than 50,000 cars equipped with passive belt restraint systems in model years 1978, '79 and '80.

It now appears that the price for the GM full-front air bag system will be $100, and for the Ford driver-only system $50. Because Mercedes and Volkswagen made flat commitments to produce a specified number of cars, the contracts with those two companies permit more pricing and marketing flexibility. Mercedes-Benz will charge up to $425 for its driver-only system. Volkswagen will charge a price for its passive belt system that is in line with the present price for the same option now being offered on VW Rabbits.

Three insurance companies—Allstate, Nationwide and Volkswagen Insurance—are committed to offering premium reductions to owners of cars equipped with passive restraints and DOT is asking other companies to make similar commitments.

Meanwhile, the government will be exploring rulemaking and other actions that might lead to higher levels of *voluntary* seat belt use.

Thirteen Tips *FOR SAFE NIGHT DRIVING*

1. Always lock your doors, both when you're away from your car and while driving.

2. Travel with your fuel tank at least half full so that you won't run out of gas.

3. Park under a light in a shopping center parking area or on the street.

4. Approach your car from an angle which allows you to check underneath it for waiting assailants.

5. Check the inside of your car before unlocking the door. Someone with a passkey may have gained entrance and be waiting for you.

6. Tell someone at home your estimated time of arrival so that if you're later than you planned, he or she can check your route or alert the authorities.

7. Plan alternate routes to use in case of traffic or weather tie-up. Drive these routes during daylight if possible so that your alternate route won't be in unfamiliar neighborhoods.

8. Drive in the center lane when possible, avoiding the outside or shoulder lanes where trouble can occur more easily.

9. Listen to your radio (or CB) for traffic conditions.

10. Use your flashers at the first sign of trouble, even while you're still driving in the traffic lanes.

11. Carry handkerchief, flashers, or some means to alert traffic if you're disabled, and remember to raise the hood of your vehicle to signal trouble.

12. Remain in your car with the windows closed until a wrecker, police car, or other safety vehicle arrives to help.

13. Keep your car properly maintained and in good running condition. Check the fluid levels (gas, transmission and brake fluids, engine oil, wiper fluid, and water in battery) frequently. Make sure windshield wiper blades and headlights work properly, the heating and defrosting system are operating to keep the windows clear, and the tires have enough tread to provide traction on slippery surfaces.

Jack Morton
Chrysler Corporation

The Stale Green Light

by DENNIS ROWE

Public Safety Department

Automobile Club of Southern California

What is a stale green light and how can you tell if there's a stale green light ahead?

A stale green light is a light that's been green long enough to be ready to pop yellow and then quickly red. Knowing far enough in advance of the impending change allows you to respond in a smooth, timely, and safe manner.

How can you tell, as you approach a light-controlled intersection, if the green light is stale? There are a number of indications:

1. You notice when the light first went green and you were some distance back (elapsed time), or the light was green when you first noticed it.

2. The pedestrian signal changes from WALK (solid white) to DON'T WALK (solid orange)—pedestrians walking at 2½ to 3½ mph take 10 times as long to clear the intersection as cars going 25 to 35 mph so pedestrians are stopped earlier in the phasing.

3. Notice the speed of traffic moving through the intersection ahead—if traffic is moving at a high uniform rate of speed, their light is a stale green.

4. Notice the spacing of traffic moving through the intersection ahead—traffic at a fresh green light tends to be closely bunched, bumper to bumper.

5. Notice whether traffic waiting out the red light is building up—there will be more as the red light gets more stale (even pedestrians), i.e., their stale red is your stale green.

6. Notice whether traffic is able to turn left (except where there is a left turn arrow) as this usually occurs well into the stale green light—and on into the yellow and occasionally the fresh red signal.

Stale Red Lights (too). Especially now that we continue to suffer the expensive consequences of high-cost fuel, it's appropriate to be aware of not only the stale green light but also the stale red light. As we approach a red traffic light we should modify our approach speed in order to plan our arrival at the intersection when the light will have changed back to green.

Reprinted with permission of the Automobile Club of Southern California from the April 1976 issue of *The Steering Column*.

Charging up to an intersection doesn't change the light in our (fuel-efficient) favor. It only advertises our lack of planning and professionalism.

You can't change the timing of the lights but you can change just when you'll arrive at the intersection. And freeing yourself from over-concentrating on lights allows you to drive more relaxed and use the free time for safety checks.

Yellow—What Does It Mean? It means that the red will show next. You may not *enter* an intersection when the light is red, but you may enter when it's yellow. That's what yellow does—it gives cross traffic a chance to clear the intersection. It says "caution."

For far too many drivers, yellow means "scamper!" And if they don't make it, speeding up just to "make it through" is hardly exercising caution. Sweaty palms, and a pounding heart—or a policeman's ticket—only changes their behavior for a while.

Not so the pro. He knows about the point of no return. He knows it's not safe unless he can "roll through," that is, make it safely without increasing his present speed and while covering the brakes *and* checking cross traffic.

BACKFIRE

CARRY SPARE PARTS

Today for the first time I saw a copy of your June 1976 issue of DRIVER. I couldn't help noticing the back cover. I used to own a Jaguar XKE roadster like the one pictured, and I can certainly understand why the owner of the one pictured carries all of those spare parts. There were several days when I wished I had some of those mentioned in the caption! In spite of its poor reliability, it was a great automobile to drive. Keep up the good work on your magazine.

Cpt John N. Bantsolas, USA
558th USA Arty Gp
APO New York 09253

TAKING YOUR CAR TO JAPAN/OKINAWA

The warning on page 12 of the Dec '76 DRIVER concerning '74 and newer autos may cause unnecessary anxiety for persons planning to take such vehicles to Japan (including Okinawa). Generally speaking, these automobiles, equipped with catalytic converter systems, may be modified at reasonable cost to meet Japanese emission standards after their arrival in Japan. Facilities for inspecting such vehicles are available at most, but not all, military installations in Japan. For vehicles manufactured after 31 Mar '76, however, a different situation prevails. U.S. authorities do not yet have the equipment necessary to test such vehicles, and it is not known whether the equipment will be procured in the near future. While type-certification of certain vehicles is an objective, such has not yet been accomplished. Personnel being transferred to Japan should not, for the foreseeable future, plan to bring automobiles manufactured after 31 March '76 with them.

CDR M. P. Nerseth, JAGC, USN
Cdr U.S. Naval Forces, Japan
FPO Seattle 98762

Thank you very much indeed for the up-to-date information about this problem, Commander.

PEN PALS WANTED

I was sure happy to see street rods and old cars in your Dec '76 issue. I am an avid street rodder and restorer and attend as many car shows and meets as possible. It seems like there are quite a few military people who enjoy this great hobby. I have five older ones myself.

If any reader has an old car or street rod, I would love to hear from him as I would like to make a roster of military who have old cars and rods. If owners will send me their names and type of car they own, I will send them a completed roster.

Keep up the good work at DRIVER.

SSgt Daniel M. Chapasko, USAF
192—19th Street
APO San Francisco 96553

ADVICE FOR HIKERS AND CAMPERS

The article on "Hiking and Camping" in the Oct '76 issue had some excellent suggestions. There is one piece of advice, however, that could present a serious safety hazard: the use of ensolite under a sleeping bag. Ensolite is light, soft, a good insulator and can be easily rolled and carried as shown in some of the pictures. However, plastic foams, like ensolite, also burn very easily and rapidly. As it burns, it forms a sticky, gooey glob that clings to everything it touches. Many people have received serious burns because plastic foams, like ensolite, caught fire. Plastic foams should be used only when well away from a campfire or other open flame. Otherwise, an enjoyable outing could turn into a disaster.

Mr. R. L. Posey
AFTEC/SE
Kirtland AFB NM 87117

Thank you so much for the excellent advice.

WATER OR GAS—WHICH IS IT?

You condemn the driver of the "No Comment" article (Jan '77 DRIVER) for carrying two water cans on the front of his vehicle whereas our unknown driver was only heeding the magazine's advice in preparing for a weekend into the "Merciless Mojave."

Without a doubt, due to the wide and varied reading of the magazine this will be only one of many letters on this matter. SMSgt J. Taylor should have checked the cans for content; those cans pictured are military water cans, easily recognized by the flip top lid, whereas a military-type fuel can has a screw-type, gasketed top.

Other than an occasional slip, I enjoy the magazine very much and use it often in safety matters for the detachment.

TSgt T. J. Lippnik, USAF
Det 12, 25th Weather Sq/WEF
George AFB, CA 92392

You are, of course, right about the cans being G.I. water cans. The individual who took the photo told us there was gas in those cans, however, and we based our caption and warning on his observation.

The owner of the Jeep has contacted us and made it clear that the cans don't contain gas and that he is using them for the intended purpose. We apologize for any uncomfort we may have caused him.

The message remains the same though. Gasoline is a highly volatile fluid, and when someone places an external supply in a place where collision or mount failure could cause the container to open, then that location and/or mounting system should be reconsidered.

Can location for front-mount should come under scrutiny too. If cans are placed too far inboard, they can interfer with headlight output and turn signal visibility.

letters to the editor

Address your letters to:
Editor
DRIVER Magazine
AFISC/SEDD
Norton AFB CA 92409

MARIJUANA SURVEY

After reading "Smoking Pot and Driving" (Aug '76 DRIVER, pages 8-13), I must say I had to agree on a few of your points, but then again, the article was like that of too many other articles on marijuana in the military service. All the articles I have read say how bad marijuana is and how it shouldn't be in the military, especially aboard U.S. Navy ships where it is "dangerous."

Why doesn't somebody in a position to do so, such as your magazine, try to find out why so many people smoke pot or do drugs such as a caption on page 12 stated. The caption said "Military drug abuse leaders are concerned about pot smoking personnel who do a couple of numbers during their lunch period and early evening hours after getting off work."

If people are really concerned about pot smokers and aren't out after their chance to bust someone, get to the heart of the matter. This really puzzles me. I believe a survey may have some surprising results.

Please publish this letter. It may open the eyes at some commands and reduce drug abuse through people working together – not the "Good Guys" against the "Druggies."

I would very much appreciate my name being withheld as I am sure it could bring severe consequences from my command down to me.

Name Withheld

Unfortunately, DRIVER has neither the charter nor resources to conduct such a survey. A comprehensive, worldwide study of thousands of drug users in the Army, Navy, Air Force, and Marine Corps was conducted for DOD by an independent research group in 1974-75. Other studies and in-house reviews are going on almost constantly as each service strives to correlate its particular drug abuse and rehab programs to the human problems of the user. Most studies indicate that, by and large, local problems reflect the attitudes and interests of local commanders and project officers and that each service "DOES CARE for its own."

PUSHING YOUR LUCK

I just finished reading the unsigned letter from the Air Force member in Arizona in the Oct '76 issue of DRIVER. I appreciate his candid comments on the effects of pot smoking on his driving ability. I'm not so appreciative of his outlook on his abilities and actions, and I'd like to address a few questions to him.

First, I think we all can confess to having changed lanes without checking for other vehicles, and usually the sight of the other driver's grille, hood, and angry face in the rear view mirror is enough to firmly implant the habit of double checking before making such moves in the future. I hope your memory is not so impaired that the habit is temporarily forgotten – and your luck changes.

How far can you push that luck when you find yourself drifting out of your lane while driving? And how is Ralph the rancher's luck holding out since you decide to drive on his back road when you're floating a little too high? Or can you remember that the stop sign is down at one of those intersections, since your memory is a little blurred? Or will it really help to explain to your victim that your radio was off, to improve your concentration, or that you are now completely straight, following the shock of the collision, due to mental control?

Finally, as to your admonition, "If you can't take it – leave it alone!" If someone else can't take it, but drives anyway, how do *I* leave it alone? Do I have to be the means for their justice, by being the other half of a head-on collision? To paraphrase your last two sentences: The experience of life is relative to the person and his state of mind. I, for one, enjoy it. Please don't take that away.

1st Lt Robert C. Truesdale, USAF
Arnold AFS, TN 37389

RV ENTHUSIAST

I'm a constant reader of DRIVER and find it factual, extremely educational, informative, and entertaining.

I am and have been an avid recreational vehicle enthusiast for the past 10 years and feel that I'm qualified to judge the articles in the June and August '76 issues. One word will describe my thoughts – SUPERB!

I have sent a copy of the June article to the Good Sam Club offices in Calabassas, CA for their attention to your fine work. I've been a Good Sam Club member for nine years.

I especially liked your checklist on page 20 of the August issue. I'm going to make copies and give them to my RV friends.

Hang in there and keep up the good work.

Mr. Albert H. Swihart
Information Office
WPAFB, OH 45433

Thank you very much for your gracious words.

EMERGENCY! BRAKE FAILURE

Newer cars have a split braking system designed to reduce the possibility of total brake failure. They have a warning light on the instrument panel which lights up when your brakes are failing from such problems as loss of pressure in the system. If the light comes on, slow down, pull off the road, and don't proceed until you have the problem corrected or determine that you can drive safely to the nearest service facility. Because of the split braking system, chances are you will have some braking power left when the light comes on, but you may have to apply more force to the pedal and need a greater distance to stop.

If you have a COMPLETE BRAKE FAILURE, what can you do? There are several things, but you must act rapidly.

- First, **GET OFF THE HIGHWAY** if possible.
- Try **PUMPING the BRAKES** rapidly to bring up pressure.
- If pumping doesn't work, put the **GEAR SELECTOR in a LOWER RANGE** (D1 or extra low in cars with automatic transmissions or shift to a lower gear in car with manual transmission) to give some braking power from the engine, and APPLY the EMERGENCY OR PARKING BRAKE with increased force. On vehicles with no manual parking or emergency brake release lever, use a modulated pressure on the pedal to prevent total locking of brakes.
- If none of these work and you are in danger of crashing into someone or something, there is one more thing you can try—**but only as a LAST RESORT. Turn the IGNITION OFF and move the GEAR SELECTOR TO LOW.** This may damage your transmission, but it may help you to stop in a real emergency.

If your brakes fail on a hill or mountain grade and none of these remedies work, look for something to sideswipe—a snowbank, a guardrail, dirt mounds on the side of the road—anything that will slow you down.